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ABSTRACT

This study was conducted to determine the extent to which a sample of 51 Fortune 1000 firms perceive that legal impediments to metric conversion exist. The seven major findings were: (1) laws and regulations are not meaningful impediments to metric conversion, but certain ones must be considered in the planning process; (2) the laws of concern are evenly divided between federal and state/local levels; (3) no meaningful correlation exists between a company's metric planning and its perceptions of legal impediments; (4) surveyed firms had not been involved in lobbying; (5) most firms would support efforts by industry to change the perception of legal impediments; (6) the two areas of greatest concern are antitrust laws and building codes; and (7) a number of firms have had excellent experiences in removing the perceptions and in some cases the actual impediments to metric conversion. In other sections of the report, background and methodology are described, and analysis by aggregate and by industrial group is included. Appendices provide additional analyses and the survey instrument. (MNS)

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THE IMPACT OF LAWS ON METRIC CONVERSION

A SURVEY OF SELECTED LARGE U.S. CORPORATIONS

FINAL REPORT

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

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SUBMITTED TO:
THE UNITED STATES METRIC BOARD

BY:
THE NEWMAN & HERMANSON COMPANY
1799 SWANN STREET, N.W.
WASHINGTON, D.C. 20009

February 1982

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THE NEWMAN & HERMANSON COMPANY
The Impact of Laws on Metric Conversion

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I. FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

I. FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The Newman & Hermanson Company conducted a study for the United States Metric Board to determine the extent to which a sample of Fortune 1000 firms perceive that legal impediments to metric conversion exist. The Fortune 1000 firms included in the study were: a) the 41 firms which identified legal impediments to metric conversion in an earlier study report commissioned by the Board, U. S. Metric Board 1979 Survey of Selected Large U. S. Firms and Industries; and b) 10 additional firms from the industry groups indicating some problems with laws and regulations. This study attempted to make several determinations among which were: whether or not legal impediments or perceptions of legal impediments to metric conversion exist; the correlation between metric planning and the perception that impediments exist; the distribution of perceived impediments among Federal, state and local laws; the nature of corporate lobbying activities; and corporate experiences in addressing legal impediments to conversion. The specific study objectives and study issues are outlined in Part II of this report.

This section of the report presents the study findings, conclusions and recommendations. The balance of the report presents the background and methodology (Part II); the analysis of the data in the aggregate and by industrial group (Part III); a report of experiences by industrial groups (Appendix A); and the survey instrument along with the formal request to conduct the survey submitted to the Office of Management and Budget (Appendix B).

The section below presents the seven major findings of the study.

FINDING: The perception of those interviewed is that laws and regulations do not represent meaningful impediments (barriers or deterrents) to metric conversion. However, certain laws are taken into consideration by firms as a factor in the planning process.

It is a finding of this study, based on interviews with representatives of 51 Fortune 1000 companies that laws and regulations do not represent meaningful impediments to metric conversion. One possible exception to this finding is the contention of four of the firms in the construction industry that building codes do represent impediments to conversion. Note: Here "impediment" includes "barrier" (laws that prohibit the use of the metric system) and "deterrents" (laws and/or regulations that make use of the metric system costly, cumbersome, or difficult).

It is important to note that representatives of three industry groups are concerned with the antitrust implications of industry efforts to convert. To some extent they would characterize the antitrust laws as laws which must be taken into consideration prior to conversion. These antitrust laws do not actually impede a firm's effort to convert to metric. The representatives of several industry groups cited three other categories of laws which at a minimum required their consideration prior to a decision to convert. This means that the officials of the firms in these industry groups would be required to study the provisions of these laws and in their planning process develop a strategy for dealing with relevant provisions of the laws and regulations. The categories of laws perceived to impact conversion activities are: fair packaging and labeling laws, weights and measures laws, building codes, and antitrust laws.

FINDING: The laws that do concern representatives of the Fortune 1000 are evenly divided between the Federal and State/local levels of government.

Exhibit I-1 provides the numerical breakdown of responses to questions in this study concerning the types of laws of concern to the firms by level and type of law.

Exhibit I-1
Laws As Impediments/Considerations: Federal and State/local

Level and Type of Law	Number of Responses (Responses Overlap)
Federal	
General	7
Procurement	0
Antitrust	8
TOTAL	15
State & Local	
Building Codes	6
State and Local Laws	8
TOTAL	14

Of the firms indicating that any of the laws are impediments or considerations, the Federal and State/local laws were fairly evenly matched. This was determined by obtaining a total of each response in the Federal category and comparing that the the total for State/local.

In addition, in response to a question in a detailed interview about the set of laws having the greatest impact on the corporations' metric planning, the answers were evenly distributed between Federal and state/local laws.

FINDING: There is no meaningful correlation between a corporation's metric planning and the nature of its perception that legal impediments exist.

Of all the firms indicating a perception that legal impediments exist, 63% had extensive planning activity; on the other hand, of all with a perception that no impediment existed, 70% had extensive planning activities.

Further, in the in-depth interviews, representatives of the firms generally indicated that the planning bore little or no relationship to their views about the impact of laws on metric conversion.

FINDING: The firms participating in this study had not been involved in company or industry-wide lobbying efforts, hence it was not possible to examine the relationship between lobbying efforts and a perception of legal impediments.

The representatives of most of the corporations participating in this study indicated that their firms had not participated in any type of lobbying efforts concerned with the issue of metric conversion. For this reason it is not possible to determine the relationships between lobbying efforts and a perception abou the existence of legal impediments.

FINDING: Most of the firms would support efforts by industry to change the perception of legal impediments.

The positive answer to this line of inquiry has limited meaning for two reasons. First, few of the firms believed that legal impediments exist, therefore agreeing to support industry efforts to solve a non-problem is easy. Second, the ultimate decision to support or not support an industry effort will be an economic decision. If it is cost-effective for the firm to follow the industry line, then they will support the industry's efforts; if it is not cost-effective the firm will not support the industry's efforts.

FINDING: An earlier finding disclosed the perception that impediments really do not exist to any great extent. The two areas of greatest concern are the antitrust laws and the building codes. In one instance the problem may be fear of the unknown; the other consideration is real.

A number of efforts have been made to convince businesses that there are ways in which they can work together to plan for metric conversion and at the same time not run afoul of the antitrust laws. An excellent example of an effort to inform businesses of the do's and dont's of metrication is the United States Metric Board publication: Antitrust: A Handbook for Metric Planning and Conversion. The cause of some of the continued fear in certain industries may be that they have had antitrust problems relating to matters other than metric conversion and they fear future dealings with the Department of Justice.

The concern about the various requirements of the building codes is based on real circumstances. It is conceivable that major changes in building codes will be costly.

FINDING: A number of corporations have had excellent experiences in removing the perceptions and in some instances the actual impediments to metric conversion.

Those corporations seeming to have been successful have several ingredients which may be useful to others. First of all, these firms generally have hade a fairly extensive planning apparatus to include a policy statement, a metric coordinator, a metric committee, and a plan. Secondly, the successful firms have identified the stakeholders in the issue and worked with them - first to educate, and later to convince of the wisdom of conversion. Thirdly, where there is strong resistence, not to force the issue.

Key to removing the perceptions of the existence of impediments has been information. Often, the more interesting the form and format of the information, often the more successful the ability to remove the perception that imediments to metric conversion exist.

One petroleum products corporation decided to convert before others in the industry. The decision to convert was, for that firm, an economic decision based on the following considerations: international trade will be facilitated as a result of the conversion; conversion represented the most effective way to handle the problem of the gasoline pump computer's inability to handle a unit price for gas in excess of 99.9 cents per gallon. The steps taken in the firm to prepare for conversion included issuing a metric policy statement and organizing a corporate metric committee. According to a company representative, the most

time-consuming of all activities associated with conversion was working with the various state officials. This, however, was viewed as time well spent since the state officials were stakeholders. In addition, the firm spent time and money to educate the public about their plans to convert. Where there was resistence to conversion by the owners of the gasoline stations, the firm did not insist on conversion. This total strategy has been viewed by company representatives and others who have critiqued the actions of the company to have been a successful strategy.

Conclusion

The major finding of this study is that most of those participating in the study (representatives of 51 Fortune 1000 firms) do not perceive that legal impediments (barriers or deterrents) to metric conversion exist for them. Only 4 of 51 representatives indicated that impediments existed. Another 14 of the firms' representatives indicated that they would have to take certain laws into consideration in their planning process, but they would not consider those laws impediments. There were however a few strong voices of concern about the impact of the antitrust laws on efforts to convert especially as part of an industry-wide effort.

Recommendations

What do these findings suggest to the U. S. Metric Board? We believe that they suggest several considerations and actions.

- The firm representatives participating in this study recognize that they are the largest firms in the country and that what may not be a problem for them could be a problem for smaller corporations. The U. S. Metric Board could pursue its efforts to address the problems of small businessess. What could enrich the effort is to determine what trends in legal impediments exist irrespective of the size of the firms. Make those sectors, priority areas for the Board. Seek the assistance of the Fortune 1000 firms in addressing the problems in their sector.

- The Board may want to determine from the U. S. Department of Justice whether the industries most vocal about the impact of antitrust laws have had other problems with Justice on antitrust matters. Where problems have existed, the Metric Board may want to prepare industry-specific supplements to the United States Metric Board publication: Antitrust: A Handbook for Metric Planning and Conversion. The supplements would distinguish between acceptable activity as outlined in the Handbook and the type of activity which had previously raised concern.

- The U. S. Metric Board may want to look at present ANMC (American National Metric Council) or other industry activities in the industries listed in Exhibit I-2 below. If there is no activity, then the Board should suggest priority attention be given to those areas. If there is activity, the Board should analyze the nature of the activity and attempt to determine why representatives of the largest corporations believe they have a problem with the laws.

Exhibit I-2
Laws Of Concern to Specific Industries

Industry	Laws
Chemical & Allied Products*	Fair Packaging and Labeling Weights & Measures Laws
Metals	Fair Packaging and Labeling Weights & Measures
Food	Fair Packaging and Labeling Weights and Measures
Petroleum	Fair Packaging and Labeling Weights and Measures
Construction	Building Codes

* This may not be necessary, given the existence of a new plan which had not yet had an impact on all of the firms in the industry.

II. BACKGROUND AND METHODOLOGY

II. BACKGROUND AND METHODOLOGY

A. Background

The Metric Conversion Act of 1975 (PL 94-168) established the United States Metric Board for the purpose of coordinating the voluntary conversion of the United States to the metric system. Section 5 of the Act established the U.S. Metric Board (USMB) as an independent Federal agency. The USMB is responsible for coordinating voluntary conversion by providing an opportunity for all interested parties (business, labor, and consumers, in particular) to plan conversion activities, by educating the public to assure understanding and awareness of the metric system, and by conducting research aimed at identifying and solving special problems and issues raised by metrication.

Specifically, the USMB is required by the act to:

- Consult with and take into account the interests, views, and conversion costs of United States commerce and industry (Section 6-1).
- Collect, analyze, and publish information about the extent of usage of metric measurements; evaluate the costs and benefits of metric use; and make efforts to minimize any adverse effects resulting from increasing metric usage (Section 6-8).
- Conduct research, including appropriate surveys; publish results of such research; and recommend to the Congress and to the President such action as may be appropriate to deal with any unresolved problems (Section 6-9).
- Submit annually to the Congress and to the President a report on its activities (Section 6-10).
- Submit to the Congress and to the President one year after the date of enactment a report on the need to provide an effective structural mechanism for converting customary units to metric units in statutes, regulations, and other laws at all levels of government, on a coordinated and timely basis, in response to voluntary conversion programs. (Section 6-11).

The Board determined that among its priorities was the elimination of legal barriers to metrication. Since its establishment in 1978, the Board has taken a number of steps necessary to the determination of actions to be taken to remove legal impediments. The Board contracted with Middlesex Research Center, Inc. to assist in the data collection for the Board's Report to the President and the Congress (Providing a Metric Option: Can Laws and Regulations be Amended in a Timely Manner?) December 1979. The Middlesex Research Center report, A Study of Metric Measurement and Legislation was submitted in September 1979. Further, the Board contracted with King Research, Inc. to survey a sample of the Fortune 1000 firms to report the status and projections of metrication among large U. S. firms and industries. The findings of that survey were indicated in the report, U.S. Metric Board 1979 Survey of Selected Large U. S. Firms and Industries. The Middlesex Research Center report concluded that while no barriers to metrication existed (i.e., laws that prohibit the use of the metric system), there are many deterrents (i.e., regulations that make use of the metric system costly, cumbersome, or difficult) and nuisances (i.e., regulations that hamper the use of the metric system). The 1979 Survey, however, found that there was a high perception of both legal and non-legal barriers to metrication among the Fortune 1000 firms surveyed. This finding corresponded to a 1978 Government Accounting Office report that observed that there was a high perception of legal barriers to metrication by U.S. businesses.

Now it is necessary for the Board to develop its own findings and then make a determination of its next steps. To do that the Board contracted with the Newman & Hermanson Company to conduct research and to investigate the nature and extent of legal barriers to metrication. The study is based on interviews with the representatives of the Fortune 1000 companies. The specific companies included in the study were the 41 companies of the 1979 Survey which indicated that legal barriers to metrication existed. In addition, a new group of 10 Fortune 1000 firms were included in the study as a control group.

B. Study Objectives

The goal of this study is to provide the U. S. Metric Board with information which will assist the Board to coordinate the voluntary conversion to the metric system. The specific study objectives are as follows:

- To determine whether legal barriers to metrication actually exist, and if so determine the nature and source of the barriers.

- To analyze the perceptions that legal barriers exist in order to understand the extent to which the problems identified are not statutory prohibitions but rather laws which make conversion cumbersome or expensive (deterrents); or laws which hamper the use of metric units (nuisances).

- To understand the relationship of the perceptions relating to metric conversion and the legal environment of individual businesses.

- To provide to the Metric Board with an analysis of the situation sufficient to allow the Board to determine the extent of USMB involvement in addressing the problems, real and perceived.

In order to meet the study objectives, seven study issues were addressed. Those issues are as follows:

1. The explanation of the two reports (Metric Measurement and Legislation and 1979 Survey), given their contrasting findings.

2. The correlation between a corporation's metrication planning and the extent of its perception of legal impediments to metrication.

3. The distribution of these perceived impediments between Federal, state, and local laws and regulations.

4. The relationship between company and industry lobbying and any resulting perception of legal impediments.

5. The likelihood that a corporation would support efforts by the industry to change or remove the perception of legal impediments.

6. The extent to which the perceived impediments are actual, and if they are not actual, the causes of the perceived impediments.

7. The experience of some corporations in overcoming and removing the perceptions of (or actual) regulatory impediments to metrication.

C. Study Methodology

The data for this study were collected using survey research methodologies - telephone and on-site interviewing. The survey consisted of telephone interviews of representatives of 51 Fortune 1000 firms. Of the 51 firms, 4 were additionally interviewed in person. The sample Fortune 1000 corporations consisted of the 41 firms which expressed the view in the U. S. Metric Board 1979 Survey of Selected Large U. S. Firms and Industries that legal impediments to metrication existed. In addition, N&H included in the study 10 Fortune 1000 firms which did not participate in the 1979 Survey. For each firm, N&H interviewed at least one of three principal respondents whose knowledge of and involvement with the corporation's metrication efforts allowed informed responses to the survey issues. It was the original plan of the study to interview at least two of the three principal respondents. During the course of the study the interviewers found that the nature of the perceptions did not suggest value in multiple interviewing. The the three principal respondents which were included in the study were:

A. The corporation's legal representative who was involved with or is knowledgeable of the corporation's metrication efforts.

B. The corporation's metric coordinator or staff person most closely associated with the coordination of metric conversion activities.

C. The corporation's planning official who was most involved with or who was most knowledgeable of the corporation's metrication efforts.

The control group of 10 corporations not in the 1979 Survey sample were selected from Fortune 1000 companies in the industry groups indicating there were laws which must be considered in any decision to convert. The industry groups represented in the sample of 10 firms were: Food(2 firms), Pharmaceuticals(1 firm); Chemicals and Allied Products (2 firms); Metal Products (2 firms); Construction (2 firms); Petroleum Refining (1 firm).

The data from the 41 firms were collected by telephone interviewing as follows: The corporation's metric coordinator was contacted and asked to identify those major products that are or would be most affected by any metrication effort. In that same phone call, the coordinator was asked to identify the most prevalent Federal, state, and local laws that affect present or future metrication efforts for the type of

regulatory topics listed below:

TOPIC AREAS

- Commerce and foreign trade
- Commercial and business practices
- Energy and mineral resources
- Revenue and taxation
- Patents, trademarks, and public contracts
- Shipping and navigation
- Other applicable topics

State regulations would follow generally the same topics, particularly those concerning granting of licenses, collecting of state revenue, and other state enforced regulations. Local regulations would concern applicable topics, particularly building codes, zoning, and other local ordinances such as fire and safety regulations that might be affected by metrication. The respondent was prompted to consider for their major product group, the applicable regulatory topics for the applicable government jurisdiction. The information gathered to this point -- the corporation's products or business practices that are or may be affected by metrication and the regulations that may impede this process -- were studied by The Newman & Hermanson Company for use in the next step of the survey strategy. The original intent of N&H was to follow-up with an extensive telephone interview of two out of three persons at each firm. The first round of calls, indicated that in many instances additional calls would be without value, since the representative of the firm indicated that all of the the information and perceptions they had to share had been shared in the original study and in the preliminary N&H telephone call. Where the N&H preliminary call indicated that additional information was available, calls were made and representatives of the firms participated in the full interview. (The interview guide is in Appendix B of this report). In order to make distinctions between real or imaginary impediments/barriers to metric conversion, the Newman & Hermanson Company interviewers sought specific examples of laws which were reported as being barriers or impediments. In addition, those interviewed were asked to explain the manner in which the law or regulation made metric conversion difficult.

Following the completion of the telephone interviews, N&H selected four firms, which from review of the interview notes, seemed to be candidates for valuable on-site interviewing. The elements of greatest interest in selecting the on-site candidates were: a) a thorough understanding of the potential that laws and regulations had as barriers to conversion; b) an indication that the firm

representative had had some experience with conversion; c) an indication that the firm's representatives were prepared to provide a profile for an industry which had experienced some level of concern about metric conversion. Following the selection of the firms, the on-site interviews were conducted.

Following the conduct of the on-site interviews the telephone interviews of the control group were conducted.

III. ANALYSIS: AGGREGATE AND BY INDUSTRIAL GROUP

Laws and Regulations As Impediments

One of the major purposes of this study was to determine if the representatives of 41 Fortune 1000 believed that any laws and regulations were impediments to metric conversion. Further, this study was designed to determine which laws and regulations were considered to be impediments. Hence, a series of questions were asked to determine if impediments existed and if so the nature of the impediments. The survey instrument is included in Appendix B of this report. The exhibit below (Exhibit III-1) shows for the 41 firms by industry group the following information:

- Where in Study #1, U. S. Metric Board 1979 Survey of Selected Large U. S. Firms and Industries, or in (Study #2), the Newman & Hermanson Company Study (The Impact of Laws On Metric Conversion), respondents from the Fortune 1000 firms indicated that specific laws and/or regulations constituted impediments to conversion. This position is represented by the letter "I".
- When in Study #2 the respondents indicated that they recognize that specific laws and regulations could affect the nature of metric conversion; that in developing a strategy for converting to metric they must consider the provisions of the laws and regulations; however, the laws and/or regulations are not considered to be impediments. This position is represented by the letter "C".
- Where in Study #1 the firm's representative indicated that a particular law was an impediment, but in Study #2 it was considered neither an impediment nor a consideration. This position is represented by the letter "x".

Exhibit III-1
Rating of Laws and Regulations as Impediments
By 41 Fortune 1000 Companies

Industry Group & Firm	LAWS & REGULATIONS									
	Federal General		Antitrust		Procurement Federal/State		Building Code		State & Local	
	1	2	1	2	1	2	1	2	1	2
Food										
1									I	x
2					I	x			I	x
3	I	C		C						
4	I	C								
5	I	C		C						
6							I	x	I	x
Apparel										
7	I	x								
8	I	x								
Pharmaceuticals										
9	I	x								
10	I	x								
Photo										
11					I	x	I	x	I	x

Exhibit III-1 (continued)
Rating of Laws and Regulations as Impediments
By 41 Fortune 1000 Companies

Industry Group & Firm | LAWS & REGULATIONS

Industry Group &	Federal General 1	Federal General 2	Antitrust 1	Antitrust 2	Procurement Federal/State 1	Procurement Federal/State 2	Building Code 1	Building Code 2	State & Local 1	State & Local 2
Construction										
12	I	x					I	I	I	I
13	I	x						I	I	x
14								I	I	x
15							I	C		
16							I	I		
17							I	C		
Metals										
18	I	x	I	C	I	x			I	C
19					I	x			I	x
Chemicals										
20									I	x
21	I	C								
22	I	C							I	C
23							I	x		
24									I	C
Paper										
25	I	x					I	x		
26	I	x					I	x		
Glass										
27							I	x	I	x

Exhibit III-1 (Continued)
Rating of Laws and Regulations as Impediments
By 41 Fortune 1000 Companies

THE NEWMAN & HERMANSON COMPANY
The Impact of Laws On Metric Conversion

Firm	LAWS & REGULATIONS									
	Federal General		Antitrust		Procurement Federal/State		Building Code		State & Local	
	1	2	1	2	1	2	1	2	1	2
Rubber										
28	I	C	I	C	I	x	I	x	I	x
29	I	C	I	C	I	x			I	x
Petroleum										
30	I	x	I	C					I	C
31									I	C
32			I	C					I	C
33			I	C					I	C
Electrical Machinery										
34							I	x		
35							I	x		
36							I	x		
37									I	x
Transportation										
38					I	x	I	x	I	x

Exhibit III-1 (Continued)
Rating of Laws and Regulations as Impediments
By 41 Fortune 1000 Companies

Industry Group & Firm	LAWS & REGULATIONS									
	Federal General		Antitrust		Procurement Federal/State		Building Code		State & Local	
	1	2	1	2	1	2	1	2	1	2
Machinery										
39					I	x	I	x	I	x
40					I	x	I	x	I	x
Instruments										
41					I	x	I	x	I	x

Discussion

Analysis of the Data from the 41 Fortune 1000 Firms: In the Aggregate

Of the 41 firms, 17 or 41.5% had indicated in Study #1 that general Federal laws constituted impediments to metric conversion. In Study #2, none of those firms indicated that the general laws or regulations were impediments. However 7 of the firms or 17% reported in Study #2 that they were aware of provisions in certain Federal laws which could affect metric conversion and that they would take those laws into consideration when planning their strategy for conversion.

In Study #1, 6 of the 41 firms (14.6%) reported that the antitrust laws were impediments to metric conversion. In the second study, 8 of the 41 firms (19.5%) indicated that they must take the antitrust laws into consideration prior to conversion. The highest percentage of those concerned with the antitrust laws were in the petroleum and rubber industry groups.

Not one of the 41 firms reported to the Newman & Hermanson Company that either Federal or state procurement laws were impediments to conversion. As a matter of fact, no one even indicated that they took procurement laws into consideration prior to converting to metric.

In the first study, 18 of the 41 firms (43.9%) reported that the building codes were impediments to conversion. In Study #2, only 4 of the 41 firms or 10% of the firms reported that building codes were impediments; an additional 2 firms (4.9%) take building codes into consideration prior to metric conversion. The 4 firms which identified the building codes as impediments were in the construction industry.

State and local laws were identified as impediments to conversion by 24 of the 41 firms (58.5%) in the first study, while only 1 firm reported to the Newman & Hermanson Company that state and local laws were impediments and 7 firms indicated that they take state and local laws into consideration prior to conversion.

Analysis of the Data from the 41 Fortune 1000 Firms: By Industry Group

The exhibits and discussion below provide information on the five major industry groups as well as aggregate data. The industry groups are: food, consumer products, construction, materials, and engineering. The breakdown within those industry groups is provided in Appendix A.

In this study, none of the industry groups indicated that the Federal General laws and/or regulations were impediments to metric conversion. However, some of the industry groups did indicate that they took Federal General laws into consideration when planning to convert. Exhibit III-2 shows the responses by industry group.

Exhibit III-2

Federal General Laws As Considerations: Study #2 Report

By Industry Group

INDUSTRY GROUP* as Considerations	Federal General Laws		
	Total	Number	Percent
Food	6	3	50.0
Consumer Products	5	0	00.0
Construction	6	0	00.0
Materials	16	4	25.0
Engineering	8	0	00.0
All	41	7	17.0

*Consumer Products (apparel and textiles; pharmaceuticals; photo equipment).
Materials (metals; chemicals & allied products; glass; rubber; petroleum).
Engineering (electrical and electronic machinnery, transportation equipment; machinery, measuring instruments)

Two industry groups indicated in the second study that they viewed the antitrust laws as laws that must be taken into consideration when converting to metric. Those industry groups are foods and materials. Exhibit III-3 provides data by industry group on antitrust laws as impediments or considerations.

Exhibit III-3

Antitrust Laws As Impediments or Considerations: Study #2 Report By Industry Group

INDUSTRY GROUP	Antitrust Law as Impediments or Considerations				
		Impediments		Considerations	
	Total	Number	Percent	Number	Percent
Food	6	0	00.0	2	33.3
Consumer Products	0	0	00.0	0	00.0
Construction	6	0	00.0	0	00.0
Materials	16	0	00.0	6	37.5
Engineering	8	0	00.0	0	00.0
All	41	6	00.0	8	19.5

The firms in the construction industry reported in the Study #2 that the the building codes were either impediments or considerations. The exhibit below provides the breakdown of the data by industry group.

Exhibit III-4

Building Codes As Impediments or Considerations: Study #2

Report By Industry Group

INDUSTRY GROUP	Building Codes as Impediments or Considerations				
		Impediments		Considerations	
	Total	Number	Percent	Number	Percent
Food	6	0	00.0	0	00.0
Consumer Products	0	0	00.0	0	00.0
Construction	6	4	66.6	2	33.3
Materials	16	0	00.0	0	00.0
Engineering	8	0	00.0	0	00.0
All	41	4	9.7	2	4.9

State and local laws were viewed as impediments to 1 firm in t construction industry and 7 in the materials industry group report that they took state and local laws into consideration prior planning conversion. The exhibit below provides the response questions about state and local laws.

Exhibit III-5

State and Local Laws As Impediments or Considerations:
Study #2 Report By Industry Group

INDUSTRY GROUP	State and Local Laws as Impediments or Considerations				
		Impediments		Considerations	
	Total	Number	Percent	Number	Percent
Food	6	0	00.0	0	00.0
Consumer Products	0	0	00.0	0	00.0
Construction	6	1	16.6	0	00.0
Materials	16	0	00.0	7	43.7
Engineering	8	0	00.0	0	00.0
All	41	1	2.4	7	17.1

The representatives of several industry groups cited four categories of laws which at a minimum required their consideration prior to a decision to convert. This means that the officials of the firms in these industry groups would be required to study the provisions of these laws and in their planning process develop a strategy for dealing with the relevant provisions of the laws and regulations. Exhibit III-6 indicates the specific laws of concern to specific industries, rather than industry category.

Exhibit III-6

Industry-Perceived Laws Impacting Conversion

Industry Group	Fair Packaging and Labeling Laws	Weights & Measures Laws	Building Code	Antitrust Laws
Chemical and Allied Products	x	x		
Metals	x	x		x
Food	x	x		x
Petroleum	x	x		x
Construction			x	
Rubber				x

This section of the report provides a brief discussion of the four sets of laws identified as requiring consideration prior to conversion.

Fair Packaging and Labeling Laws. At the Federal level, the Fair Packaging and Labeling Act of 1966 (PL 89-755; 15 U.S.C 1415 et seq.) represents the law of concern to some industry groups. This Act has as its primary purpose to enable consumers to obtain accurate information as to the quantity of the contents so that they can make value comparisons. The law regulates the labeling of consumer commodities with respect to the identity of the commodity; the name and place of business of the manufacturer, packer, or distributor; the net quantity of contents; and the net quantity of serving, uses, or applications represented to be present. For purposes of the Act, "consumer commodity" means any product which is customarily produced or distributed for sale through retail sales agencies for consumption or use in the household.

No person engaged in packaging or labeling or distributing consumer commodities shall distribute commodities which do not conform to the provisions of the Act.

Regulations promulgated under the Act generally specify the method of expression of the net quantity of the contents to include: weight in terms of avoirdupois pound and ounce; fluid measure in terms of U. S. Gallon; linear measure in terms of yards, feet, and inches; area in terms of square yards, square feet and square inches; and dry measure in terms of the U. S. bushel, peck, dry quart and dry pint.

The regulations under the Act provide that an accurate statement of the net quantity of contents in terms of the metric system of weight or measure may also appear on the principal display panel or on other panels.

Observation: The Act and the regulations under the act allow for dual labeling. There is no prohibition against showing metric units first. The sole use of metric on regulated products would require an amendment to the law.

At the state level the Fair Packaging and Labeling laws are often a part of the Weights and Measures laws.

Weights and Measures Laws: Typical Weights and Measures laws cover standard weights of commodities, method of sale of food and nonfood items, and packaging and labeling regulations. In some instances the laws are under the jurisdiction of the state departments of Agriculture.

The laws generally indicate that the standard weights and measures have been furnished by the government of the United States and, for example, consist of one standard yard measure and one set of standard troy ounces. An example of the provisions of state laws on units of weights and measure is as follows: The yard is divided into three equal parts, called feet, and each foot into twelve equal parts called inches. For measures of cloths other commodities commonly sold by the yard it may be divided into halves, etc.

The state official responsible for implementation of the weights and measures provisons often has among the duties: a) to inspect and test to ascertain if the commercially-used weights and measures are correct when used: 1) in determining the weight, measure or count of commodities of things sold, or offered or exposed for sale, on the basis of weight, measure, or count; or 2) in computing the basic charge of payment for services rendered on the basis of weight, measure or count. b) Weigh, measure, or inspect packaged commodities kept, offered, or exposed for sale.

Some state laws provided that the system of weights and measures in customary use in the United States and the metric system of weights and measures are jointly recognized, and either one, or both, of the systems shall be used for all commercial purposes. Most states, however, provide that, in the case of a commodity packaged for export, the declaration of quantity may be in terms of the metric system otherwise customary units are required. In the latter type of jurisdiction a dual system is generally allowed.

Building Codes: Building codes are designed primarily to protect the public from fire and other safety hazards. The codes consist of standards and specifications. Often the codes are adminstered by local governments, but are in fact formulated and enforced through state governments. The types of standards and specifications covered in the codes relate to the type of construction, acceptable loads and stresses, and the quality of material. The requirements are almost always expressed in customary units.

Antitrust Laws: The Sherman Antitrust Act and the Federal Trade Commission Act prohibit all agreements or combinations in restraint of trade and unfair methods of competition in or affecting commerce and unfair or deceptive acts or practices in or affecting commerce. Some of the acts which are considered inconsistent with free competition are price fixing and collective boycotts. One factor which may lead the court to determine that price-fixing exists is the exchanging of information between competitors without making that information available to the general public.

Violations of the antitrust laws could lead to treble damage actions as well as civil and criminal penalities.

Observation: The antitrust laws cause concern to the extent that collaboration among competitors in the development of industry metric conversion plans is viewed as being in restraint of trade. Some industry representatives have been and continue to be reluctant to invite antitrust lawsuits.

The Relationship Between Planning Activities and Perceptions About the Impact of Laws on Conversion

The Exhibit III-7 provides information on the nature of the planning activities of the 41 firms in the study. Following that exhibit are analyses of the relationship between planning and perceptions about the impact of laws on conversion.

Exhibit III-7

Metric Conversion Planning Activities of 41 Fortune 1000 Firms

Industry Group and Firm	Metric Policy	Metric Coordinator	Metric Committee	Metric Plan
I. FOOD				
Food and Kindred Products Firms				
1	No	No	No	No
2	Yes	Yes	Yes	Yes
3	No	Yes	Yes	Yes
4	No	No	No	No
5	No	No	No	No
6	No	No	No	No

Industry Group and Firm	Metric Policy	Metric Coordinator	Metric Committee	Metric Plan
II. CONSUMER PRODUCTS				
Apparel and Textile Firms				
7	No	Yes	Yes	Yes
8	Yes	Yes	Yes	Yes
Pharmaceutical Firms				
9	No	No	No	No
10	No	No	No	No
Photo Equipment				
11	Yes	Yes	Yes	Yes
III CONSTRUCTION				
Building and Construction Firms				
12	Yes	Yes	Yes	Yes
13	No	No	No	No
14	Yes	Yes	No	No
15	No	No	No	No
16	No	No	Yes	No
17	Yes	Yes	Yes	Yes

Industry Group and Firm	Metric Policy	Metric Coordinator	Metric Committee	Metric Plan
IV. MATERIALS				
Metals Industry Firms				
18	No	Yes	No	No
19	Yes	No	Yes	No
Chemical and Allied Industry Firms				
20	Yes	Yes	Yes	Yes
21	Yes	Yes	Yes	Yes
22	Yes	Yes	Yes	Yes
23	Yes	Yes	Yes	Yes
24	Yes	Yes	Yes	Yes
Paper Products Firms				
25	No	Yes	No	No
26	No	Yes	No	No
Glass Products Firms				
27	Yes	Yes	Yes	No
Rubber Products Firms				
28	Yes	No	Yes	No
29	Yes	Yes	Yes	Yes

Industry Group and Firm	Metric Policy	Metric Coordinator	Metric Committee	Metric Plan
Petroleum Refining and Related Industries				
30	Yes	Yes	Yes	Yes
31	No	No	No	No
32	Yes	No	Yes	No
33	Yes	Yes	No	No
V. ENGINEERING				
Electrical and Electronic Machinery Firms				
34	No	No	No	No
35	Yes	No	Yes	No
36	Yes	Yes	Yes	Yes
37	Yes	Yes	No	No
Transportation Equipment Firms				
38	Yes	No	Yes	Yes
Machinery, except Electrical				
39	No	No	No	No
40	No	No	No	No
Measuring, Analyzing and Controlling Instruments Firms				
41	No	No	No	No

Exhibit III-8 indicates the nature of the metric planning activities of the five industry groups. Over half of the total sample of 41 firms had established a metric policy, had a metric coordinator, and a metric committee. The percentage of firms having a metric plan was 36.5.

Exhibit III-8
Metric Conversion Planning Activity of 41 Fortune 1000 Companies
Percentage Participation by Activity and Major Industry Group

MAJOR INDUSTRY GROUP	Percentage Participation Metric Policy	Metric Coordinator	Metric Committee	Metric Plan
Food	40.0	60.0	33.3	33.3
Consumer Products	50.0	50.0	50.0	33.3
Construction	50.0	50.0	50.0	33.3
Materials	75.0	75.0	68.7	37.5
Engineering	50.0	25.0	37.5	25.0
ALL	53.6	53.6	53.6	36.5

The study determined the extent to which the planning activity was extensive (where the firm participated in at least two of the four activities); limited (where the firm participated in only one of the planning activities); or nonexistent. Exhibit III-9 indicates that of the 41 firms in the study, 31.7 percent did not participate in any of the activities, while 58.5 percent participated in at least two of the four activities.

Exhibit III-9
Metric Conversion Planning Activity
Of 41 Fortune 1000 Firms

Percentage of Extensive, Limited and Nonexistent Planning

Major Industry Group	Extensive	Limited	Nonexistent
Food	33.3		66.6
Consumer Products	60.0		40.0
Construction	50.0	16.6	33.3
Materials	75.0	18.8	6.2
Engineering	50.0		50.0
ALL	58.5	9.8	31.7

There is little correlation between the nature of the planning activity and perceptions as to whether or not impediments to conversion exist. Consider 37.5% of the materials firms contended that antitrust laws constituted impediments to conversion, while zero percent of all other firms contend that antitrust laws are impediments to conversion. The nature of the planning activity for the materials group was extensive (75.0%); limited (18.8%); and nonexistent (6.2%). On the other hand the extensive planning activities for the other groups were as follows: food (33.3%); consumer products (60%); construction (50%); engineering (50%). One may want to attempt to draw the conclusion that the greater the planning activity the greater the likelihood that impediments are perceived. Such a conclusion cannot be drawn when reviewing other sets of laws. Not one industry group indicated that the Federal general laws were impediments, yet there is the distribution shown

below in the extent of planning. For the building codes, 66.6% of the construction firms reported them as being impediments, yet 50% of the firms had extensive planning activities - 25% below the industry group showing the most extensive planning activity (materials group).

One other analysis of the data confirms the conclusion that there is little correlation between the nature of the planning activity and perceptions that legal impediments exist. Exhibit III-10 shows that of all the firms indicating a perception that legal impediments exist, 50% had extensive planning activities; on the other hand of all of the firms with a perception that no impediment exist, 59% had extensive planning activities.

Exhibit II-10

Relationship Between Planning and Perception of Legal Impediments to Metric Conversion

Level of Metric Planning	Perception That Legal Impediments Exist	
	YES	NO
Extensive (at least two of four actions: plan, coordinator, committee, policy)	50%	59%
Limited (only one planning activity existed)	25%	8%
Nonexistent planning activity	25%	32%

The relationship between lobbying efforts and perceptions that legal impediments to metric conversion exist.

The representatives of most of the corporations participating in this study indicated that their firms had not participated in any type of lobbying efforts concerned with the issue of metric conversion. One of the construction firms indicated that they had made a limited effort to convince the state legislature to revise the building code but to no avail. They indicated further, that they did not expend major resources for this effort. A manufacturer of chemical agricultural products had been involved for a limited period in lobbying the state to change the Fair Packaging and

Labeling laws to favor metric. This lobbying effort was soon abandoned because the consumers of this manufacturer's product -the farmers- indicated little or no interest in metrication.

The Control Group Findings

The control companies did not perceive that they or their industries would find that laws or regulations would be impediments/barriers to metric conversion. Among the observations of the control firms are the following:

- A firm in the food industry category is using dual labeling on about 80% of their products. In this process they have had no criticism from state, local, or Federal agencies relative to their compliance with the laws.

- A firm involved in construction indicated that even though laws regulating this business exist, the primary factor governing whether or not a business converts is economic.

- A firm manufacturing chemical products indicates that there are no laws which are impediments to metric conversion. There is, further, no concern about the impact of the antitrust laws.

- Several of the firms have no plans to convert. Their reasons for this decision are: they are not involved in exporting; there is no benefit to their assuming the cost of conversion.

APPENDIX A

INDUSTRY GROUP ANALYSIS

This appendix to the report analyzes by industry group the experiences and perceptions of the impact of laws on metric conversion. The analysis is based on the interviews with representatives from the 41 Fortune 1000 firms participating in this study. The topics addressed included: the rationale for converting or not converting; the extent to which conversion has taken place; the extent to which legal impediments to conversion exist; the nature of the legal impediments that do exist; the nature of corporate planning activities; the relationship of corporate planning to conversion; the relationship between corporate lobbying and the existence of legal impediments; and experiences in overcoming impediments that may exist.

The 41 Fortune 1000 companies were divided into five major industry groups: food; consumer products; construction; materials; and engineering. The companies were subdivided and placed in the industry group which represented the greatest percentage of the firm's sales. The subdivisions of the five groups are listed below.

Food

Consumer Products
- Apparel and Textiles
- Pharmaceuticals
- Photo Equipment

Construction

Materials
- Metals
- Chemicals & Allied Products
- Paper & Allied Products
- Glass
- Rubber
- Petroleum Refining & Related Industries

Engineering
- Electrical and Electronic Machinery
- Transportation equipment
- Machinery, except electrical
- Measuring, Analyzing and Controlling Instruments

THE NEWMAN & HERMANSON COMPANY
The Impact Of Laws On Metric Conversion
Appendix A
FOOD AND KINDRED PRODUCTS

The companies in this industry sector manufacture or process foods and beverages for human consumption. Among the types of activities of the corporations in this group are: establishment of meat packing plants, canning of speciality food products, canning of fruits, vegetables, preserves, jams and jellies; milling flour or meal to be sold in plain or in prepared mixes or doughs; manufacturing cereal breakfast foods; manufacturing wines, and brandy spirits.

The laws most often cited by those companies participating in this study as having the potential of affecting the nature and extent of metric conversion were the Fair Packaging and Labeling laws at the Federal and state levels. Some of the corporation representatives also expressed concern about the impact of the U. S. antitrust laws on their ability to convert. During a previous study of the Fortune 1000 Companies, the companies in this industry added to the Fair Packaging and Labeling laws and the antitrust laws the following laws they considered to inhibit conversion to metric: Federal or state procurement regulations; building codes; state and local laws. A finding of this study is that as far as this sector is concerned none of the laws is a barrier to conversion. A further finding of the study is that this industry must take into consideration the Fair Packaging and Labeling laws and possibly the antitrust laws in their planning efforts. The existence of these laws is a minor factor in a firm's decision to convert or not to convert. The companies in this group will convert if mandated by the laws or if it is in their economic interest. In the instances where the companies are involved in export, they have converted products to meet the requirements of their customers.

Most of the companies in this industry sector have not been involved in extensive formal metric planning activities. There appears to be little correlation between the extent of planning and their perception of the existence of legal impediments.

A case study of one of the corporations in this industry group is reflective of the experiences of the firms in this industry group which participated in the study.

Food & Kindred Products Case Study

There has been very little conversion of the products manufactured and marketed by this firm. According to the firm representative, the limited conversion that has taken place is for two reasons: 1) There was an industry decision to convert wines and distilled spirits to metric sizes for marketing reasons. The industry action resulted in this firm

converting the products in the wines and distilled spirits line;and 2) A certain percentage of the products manufactured by this firm are exported.

The firm has not been involved in planning for metric conversion. In fact, there has been no increase in metric planning over the last five years. Further, the firm does not at this time intend to establish a formal approach to metric conversion.

The corporation was not involved in any lobbying activities, either as an independent body or in conjunction with an industry-wide effort. Generally the firm leaves all lobbying on issues such as metrication to the trade association. When there is a decision of the industry to take certain steps, such as the adoption of production standards, the corporation quickly adopts the standards.

The reaction of the firm's representative to a question in the first study commissioned by the Metric Board about the existence of legal impediments was to indicate that the Federal Fair Packaging and Labeling laws administered by the Food and Drug Administration and the U. S. Department of Agriculture would inhibit conversion to the metric system. In the process of this study, a firm representative pointed out that the Fair Packaging and Labeling laws regulated their activities and that were they to decide to convert they would have to take those laws into consideration. However, the firm did not consider these laws to prohibit any type of activity they might have an interest in.

THE NEWMAN & HERMANSON COMPANY
The Impact Of Laws On Metric Conversion
Appendix A

CONSUMER PRODUCTS
Apparel and Textiles

The companies in the apparel industry group produce clothing and fabricate products by cutting and sewing purchased woven or knit textile fabrics and related materials such as leather, rubberized fabrics, plastics and furs. The companies in the textile industry may perform any of the following operations: preparation of fiber and manufacturing of yarn; manufacturing woven fabric and carpets and rugs; dyeing and finishing fiber; and coating, waterproofing, or otherwise treating fabric.

The only laws or regulations cited by either of the companies in this grouping in the first study were the Textile, Fiber Production Identification Act, ICC regulations and the state and local laws. A finding of this study is that no laws or regulations are perceived to be barriers to metric conversion, however the ICC regulations do require documentation in customary units. In fact it does not appear that the firms must take laws or regulations into consideration when making decisions about metric conversion.

In the instances where the companies export, they have converted. One company has initiated soft conversion for most products.

The two companies participating in the study have been involved in formal planning processes.

Below is a case study of one of the corporations in the study.

Textile and Apparel Industries Case Study

The firm has initiated soft conversion of most of its products to metric. Most of the products are manufactured on machines converted to metric units. The reasons this company has moved toward soft conversion are as follows: 1) They experienced expanded exports; 2) They believed metric to be a simplified measurement system.

The firm has been involved in extensive planning within the last five years, including the development of a company metrication plan and a timetable for company conversion. Further, the firm appointed a metric coordinator for each of the 14 divisions. Once the soft conversions were completed, the firm reduced the planning meetings and activities of the coordinators. The mechanism is in place and can be operative on a short notice. Neither before nor during the conversion process was the firm involved in individual or industry lobbying activities. A representative of this firm does believe that if there were legal impediments to metrication,

that there are industry-wide efforts that can be made to facilitate voluntary metric conversion.

The major problem identified by the firm's representative was that they must provide information in the shipping documents in customary units.

The company is part of an industry that has accepted the practice of soft conversion. The output can be soft converted and the invoices in both metric and customary. This may all change within the next five years - their goal for total hard conversion. What happens in the interim is that as they require new equipment they purchase metric, if the costs are not prohibitive.

The firm representative does not believe that any of the laws prohibit conversion, but that the ICC regulations requiring shipping documents to be customary must be followed. The increase in metric planning led them to understand the requirements of the ICC regulations. This firm was not concerned about the antitrust implications of their action. They were careful to discuss conversion issues with others in the industry under the umbrella of the American National Metric Council.

Pharmaceuticals

The companies in this group are primarily engaged in manufacturing, fabricating or processing drugs in pharmaceutical preparations for human or veterinary use. The greater part of the products of these companies are furnished in forms such as tablets, ointments, or solutions. Products of this industry consist of two types: 1) pharmaceutical preparations promoted primarily to the dental, medical or veterinary professions; and 2) pharmaceutical preparations promoted primarily to the public.

The representatives of these firms did not find that there were laws or regulations which were impediments to metric conversion. What is important to note about this industry is that it is almost fully metric. The reasons for converting were: 1) They could deal in the international market better. and 2) Conversion would not be difficult for them because the firms' personnel with scientific background were already able to work with metric. The pharmaceutical manufacturers have been converting their operations over the last 50 years. They still however sell some of the over-the-counter- drugs in customary units.

These companies do not now or do they have planned formal corporate activity. Given their advanced stage of conversion, there has been no need to establish a formal

structure to deal with the minor conversions that are presently taking place.

Photographic Equipment And Supplies

The companies in this industry are primarily engaged in manufacturing photographic apparatus, equipment, parts, attachments and accessories; sensitized film, paper, cloth and plates and prepared photographic chemicals.
According to the one firm in the study, soft conversion of both domestic and exported products has taken place. This has taken place in an environment of a fairly structured apparatus including a formal policy statement, a coordinator, and metric committee and a formal plan. The first study indicated that there were legal impediments to metrication to include: Federal and state procurement laws; the building codes and state and local laws. The finding of this study was that as far as this firm is concerned there are no legal impediments to metrication. Further, this firm does not believe that the laws represent a major consideration of the firm in their decisions to convert.

CONSTRUCTION

The firms in this industry group are primarily engaged in the construction (including new work, additions, alterations, remodeling, and repair) of dwellings, office buildings, stores, farm buildings and other projects of a similar character. Also firms in this sector can be engaged in the construction of highways, streets, bridges, water projects, sewage treatment, air fields, and heavy industrial facilities. The installation of prefabricated building equipment and materials is included in this industry group. For purposes of this study, those manufacturers of mobile homes are included in this industry group.

The laws most often cited by those companies participating in this study as having the potential of affecting the nature and extent of metric conversion were the building codes and the state and local laws. The concern was expressed that the building codes were a series of standards and specifications in customary weights and measures. The hindrance that the building codes present to hard conversion is the potential cost of retesting building products.

There has been limited formal planning for metric conversions. There appears to be little correlation between the extent of the planning and the perceptions of the existence of legal impediments.

There is little exporting indicated by these companies. As far as the domestic industry is concerned, there is no major conversion activity taking place.

MATERIALS

Metals

The firms in this group are engaged in the smelting and refining of ferrous and nonferrous metals from ore, pig, or scrap; in the rolling, drawing, and alloying of ferrous and nonferrous metals; in the manufacture of castings and other basic products of ferrous and nonferrous metals; and in the manufacture of nails, spikes, and insulated wire and cable.

In this study, the firms in this group did not highlight any laws or regulations as impediments to metric conversion. During the previous study of the Fortune 1000 the companies indicated that the following laws and regulations inhibited conversion: Federal Trade Commission regulations, Federal and State procurement regulations, building codes, state and local laws, and the antitrust laws.

There is conversion activity because one of the major customers -- the automobile industry - is converting.

Metals Industry Case Study

There has been limited conversion to metric by this firm- 8% of its product line. That conversion has generally taken place because of the needs of the customer industries. The plants use customary units although some machine tools have metric capability. The company has dual capacity billing.

The reluctance to convert was not related to the laws and regulations, but rather a marketing and cost/benefit decision. In other words, the existance of laws and regulations are not a problem if for business reasons a firm has decided to convert. The laws and regulations could be a problem if there are economic reasons not to convert.

The industry itself has not pushed conversion. This firm takes the position that it is a follower, not a leader. There is, in the view of the firm representatives, no advantage to move out ahead of the rest of the industry.

When this firm was involved in exports to a greater extent than it is today, there was a higher percentage of their products which had been converted at least soft converted. Today its exports are minimal, and at the same time the percentage of its products which are converted is minimal. Its exports have decreased because the firm is no longer competitive.

Among the major considerations of a firm such as this in deciding whether or not to convert are: What equipment changes will be required? What changes will be required in the accounting and other recordkeeping activities? What reprogramming of the computers will be required? What will be the cost of all of these changes? None of these considerations have major legal implications.

This firm established a corporate metric committee, involving the managers who were responsible for the marketing and production of products which may be converted. The Vice President responsible for corporate planning identified the relevant managers. Within the last five years the level of metric planning has increased. This increased planning has made the corporate officials aware of the laws they must consider prior to making conversion decisions. The firm had not been involved in lobbying efforts per se. However, a representative of the firm was very active with both ANMC and ANSI.

Chemicals and Allied Products

The companies in this industry sector produce basic chemicals and manufacturing products by predominantly chemical processes. Establishments classified in this major group manufacture three general classes of products: 1) basic chemicals such as acids, alkalies, salts, and organic chemicals; 2) chemical products to be used in further manufacture such as synthetic fibers, plastics materials, dry colors, and pigments; and 3) finished chemical products to be used for the ultimate consumption such as soaps; or to be used as materials or supplies in other industries such as paints, fertilizers, and explosives.

The laws most often cited by those companies participating in this study as having the potential of affecting the nature and extent of metric conversion were the Fair Packaging and Labeling laws at the Federal and state levels. During the previous U. S. Metric Board study of the Fortune 1000, the companies in this industry group indicated that the laws they considered as inhibiting conversion to metric were: The Fair Packaging and Labeling laws; the building codes, state and local laws.

As is the case with other industry groups, where there was exporting, the firms had at least soft conversions. These firms, however, did not indicate a high level hard conversion of domestic products.

Most of the companies in this industry group have been involved in formal metric planning.

A case study of one of the corporations in this industry group is reflective of the experiences of the firms in this industry group.

Chemical and Allied Products Case Study

This firm manufactures agricultural chemical products. There has been little to no conversion of the products sold domestically. The products exported have been fully converted. The reason for the conversion was customer demand. The representative of this firm indicates that this firm is not at all interested in converting to metric and believes that few firms will convert unless it is mandated.

The only laws which could inhibit metric conversion according to the firm representative were the state labeling regulations. But these cannot really be regarded as barriers, according to the official. Production and marketing considerations have a much greater impact upon the corporation's metric planning than does the existence of legal impediments.

There is not now and there are no plans to establish a metric planning effort in this firm. In response to the question: "Do you believe that the level of metric planning has increased over the last five years in your corporation? The firm representative indicated that the level of effort had been at "0" and it is about the same now. In this environment there was minimal lobbying at the state level to revise the laws. Since the ultimate customer of this firm, the farmer, is not interested in metric, little happened as a result of the lobbying efforts.

Paper and Allied Products

The firms in this industry group manufacture pulps from wood and other cellulose fibers, and from rags; the manufacture of paper and paperboard; and the manufacture of paper and paperboard into converted products such as paper coated off the paper machine, paper bags, paper boxes, and envelopes.

In this study the firms in this industry group did not specify laws or regulations which they considered to be impediments to metrication. During the previous study, those interviewed identified the following laws as impediments: The Federal Fair Packaging and Labeling laws and the local building codes.

Both firms in this industry group have a metric coordinator. At that the planning mechanism ends.

Glass

The firms in this industry group are engaged in manufacturing flat glass and other glass products. In addition firms are engaged in manufacturing glass containers for commercial packing and bottling and for home canning.

In the original study of the Fortune 1000 companies, the firm in this group indicated that building codes and state and local laws constituted legal impediments. In this study, that firm neither indicated that the laws were impediments or considerations in the conversion process. For this firm, although not having a high percentage of products in metric, the planning process is a serious one. The firm had established a metric committee, had appointed a coordinator and had a formal policy statement.

Rubber Products

The companies in this group are involved in manufacturing from natural, synthetic, or reclaimed rubber products such as tires, rubber footwear, mechanical rubber goods, and flooring. Those firms engaged in the manufacturing of tires and inner tubes for all types of vehicles including airplanes and farm equipment.

In this study, the firms in this industry group found state and local laws and the antitrust laws to affect metric conversion. In the original study, the firms also identified Federal motor vehicle safety standards and the GSA/DOD procurement regulations to be impediments.

Where there were exports, there was a high percentage of fully metric conversions. However, for the domestic products conversion was limited. As is true of the entire industry, these companies expect that conversion is inevitable because the automobile industry is beginning to use metric tires.

In the case of both firms in this industry group, there was some metric planning activity.

Below is a case study of one of the firms in this industry group.

Rubber Industry Firm Case Study

Products that are exported have been converted either by soft conversion or hybrid conversion. There has been minimal conversion of the domestic products. The general conclusion is that there are really no laws which impede metric conversion. The laws and regulations which have minor potential of affecting metric conversion, according to the official of this firm, are the Motor Vehicle Safety Standards administered by the Department of Transportation. To a

lesser extent the firm believes that the GSA and DOD Tire Procurement specifications must be taken into consideration prior to making a decision to convert to metric.

The firm representative did express the view that the U.S. Federal Antitrust laws would inhibit a coordinated program to convert. However, the solution to the problem was to work through the American National Metric Council.

Both the relationship with the suppliers and with the customers influence decisions of the firm to convert. It is production/marketing decisions that have an effect on the corporation's metric planning. In other words the firm is neutral about conversion and will move with pressure from an external force. The participant in this study saw some costs, but little benefits to conversion until the workforce is educated in metric.

After the passage of the 1975 Act, the firm had a very active metric committee. The activity has since been minimal with a mailing list of 15 members and neither recent or planned meetings. In fact, the firm now has only a "maintenance" effort structured to follow the regulations, keep abreast of changes, and answer inquiries about the status of conversions in the firm. One can conclude that there has been a decrease in metric planning in the last five years. This decrease in planning is not as a result of a greater awareness of the legal impediments.

The firm is not and has not been involved in lobbying efforts. The representative indicated that the trade association may be involved in lobbying, but if so it is without the active support of this firm. However, the firm follows the lead of the industry in conforming to production standards.

Petroleum Refining and Related Industries

These industries are primarily engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, and other products from crude petroleum through straight distillation of crude oil, redistillation of unfinished petroleum, derivatives or other processes. Many firms in this industry group are also involved in transportation and marketing.

Some conversion has taken place in this industry. The major conversion is being considered cost-beneficial to industry because the computers in the gas pumps were not able to handle prices of more than $1 a gallon. The purchase of new pumps could be more expensive than all the costs associated with converting to metric.

The companies in this group are most concerned about the state and local laws as well as the provisions of the U. S. Antitrust laws. The state and local laws which are viewed as being a consideration prior to conversion, rather than an impediment, are those relating to measurement. Many states require that all products be sold in only customary units.

There appears to be no correlation between the perception of legal impediments and the nature and extent of planning. The companies with a fairly formal planning apparatus as well as those without a planning activity viewed the laws in the same fashion.

Below are two case studies, which indicate the experiences two firms in this group have had with metric conversion.

Petroleum Product Case Study A

This firm has converted neither its domestic or foreign sold products to any great extent. One of the major concerns of the representative of this industry is the impact of the antitrust laws on their ability to adopt a voluntary information plan for the consumers. The strongest statement of concern about antitrust violations were expressed by representatives of this company. They were sufficiently concerned that they delayed implementing a trade association plan which was designed to inform customers about liter pricing. In the view of this firm, even though the information was designed to help the consumer, it could be interpreted as a potential antitrust violation.

Further, there is an indication that the various Fair Packaging and Labeling laws limit the ability to produce all-metric products. One of the representatives of this company expressed the view that the restrictions may not be in the laws but rather in the firm's interpretation of the laws. In any event, production and marketing considerations control decisions about metric conversions not the existence of legal impediments.

The firm has a formal planning process, including the issuance of a metric policy statement and the development of a company metrication plan. The metric committee is made up of representatives of the company divisions. Most of the work of the committee can be done by mail and the phone, with only occasional meetings. The level of metric planning in the firm has increased over the last five years. The firm representative believes that the increase in planning has led to a greater awareness of the impact of the laws on metrication.

The firm representatives were not aware of any lobbying activities for or against conversion. There will probably be

some trade association lobbying if government attempts to mandate conversion. The industry is a highly measurement sensitive business, hence total conversion would have a major cost impact on the firms within this sector.

Petroleum Products Case Study B

This corporation decided to convert to metric before others in the industry. In fact, this firm began its planning process long before there was any industry-wide consideration of metric conversion. The decision to convert was an economic one based on the following considerations: international trade will be facilitated as a result of conversion; this is the most effective way to handle the problem of the gasoline pump computer's inability to handle a unit price for gas in excess of 99.9 cents per gallon.

The steps taken in the firm to prepare for conversion included issuing a metric policy statement and organizing a corporate metric committee. One of the top officials of the corporation coordinated the effort, but was not officially designated the metric coordinator. The activities of that person included: writing memos to management to explain the corporation's proposed strategy; attending meetings of the metric committee; and following market trend.

According to a company representative, the most time-consuming of all activities associated with conversion was working with the various state officials. Since the corporation was interested in an efficient conversion, a great deal of time was taken working with the state officials as well as the potential clients.

The only state laws referenced by this firm as being a consideration in a decision to convert were the state Method of Sale laws. For this representative, those laws were not barriers but rather their existence did require them to develop strategies for converting within their provisions. There was also concern expressed about the provisions of the U. S. Antitrust laws. Those laws do cause companies to hesitate.

Electrical and Electronic Machinery

The firms in this industry group are engaged in manufacturing machinery, apparatus and supplies for the generation, storage, transmission, transformation, and utilization of electrical energy. Included in this group are firms engaged in manufacturing household cooking equipment, refrigerators, freezers, laundry equipment as well as television and radios. In addition, the firms in this group manufacture semiconductor and related solid state devices.

The four companies in this industry group did not perceive laws and regulations as being impediments or even considerations in their decisions to convert. In the first study of the Fortune 1000 the firms in this group indicated that the building codes and state and local laws were impediments to conversion.

The extent to which the firms have converted varies. The manufacturer of home appliances has not converted more than 3% of their products. In addition, there was little or no metric planning initiated. On the other hand, firms involved in the manufacture of electronic equipment are further along in their efforts to convert.

Transportation Equipment

The firms in this group manufacture equipment for transportation of passengers and cargo by land, air, and water. Products produced by companies in this group include motor vehicles, aircraft, railroad equipment and miscellaneous transportation equipment.

In the original study the firm in this industry group had indicated that the following laws were impediments to metriction: procurement laws, building codes, and state and local laws. In this study the firm indicated that none of the laws were impediments to metric conversion, nor was there a need for major consideration of these laws prior to conversion.

This firm was fairly formal in its planning process, having established a metric planning committee, established a metric policy, and having developed a plan for conversion.

Machinery, Except Electrical

The firms in this group are engaged in manufacturing machinery and equipment other than electrical equipment. Machines powered by built-in or detachable motors are included in this group.

The firms in this group have converted their products manufactured for export. There was even a fairly high percentage of soft conversions of domestic products.

In the original study, the firms identified the following laws as impediments to metrication: procurement laws, building codes, and state and local laws. The finding of this study, however, is that these firms do not consider the laws to really impede their decisions to convert.

Neither firm has established any formal planning mechanism.

Measuring, Analyzing and Controlling Instruments

The firms in this group are engaged in manufacturing instruments for measuring, analyzing and controlling including surveying and drafting instruments.

The firm in this study had limited products which had been converted. There were not immediate plans to become involved in converting their products. As a matter of fact, the study firm had not established a metric committee, prepared a policy statement, or appointed a metric coordinator. This firm indicated in the original study that three types of laws (procurement, building codes, and state and local laws) were impediments. It was the finding of this study that there did not exist a perception that these laws were barriers.

APPENDIX B

SURVEY INSTRUMENT & OMB REQUEST

RESPONDENTS RESPONSES

SECTION I: General Information

1a. A B C What are the particular aspects of your corporation's product mix and business practices that are most affected by the use of metric standards?

- o Products produced that do/can use metric parts.
- o Foreign trade markets that demand metric products.
- o Foreign branches/partners that use metric standards.
- o Relationship with suppliers concerning metric standards.
- o Relationship with customers concerning demand for metric products.
- o Marketing strategy as it is affected by metric planning.

1b. A B C Concerning your corporation's general experiences with metrication, do you believe that federal, state, and local laws and regulations present impediments to the voluntary conversion to the metric system?

YES	1	1	1
NO	2	2	2
Not Sure	3	3	3

What has been your corporation's general experiences with the laws and regulations that affect your corporation's metric planning and voluntary conversion practices?

- o Products affected by metrication.
- o Marketing strategy as affected by metrication.
- o Impediments due to various laws and regulations concerning the use of metric standards that affect your corporation's business strategy.

1c. A B C What is your role concerning your corporation's metric planning and conversion efforts? Please begin by estimating the percentage of your time that you spend on these efforts.

Not able to estimate	0	0	0
Between 0 and 5 percent	1	1	1
Between 5 and 15 percent	2	2	2
Between 15 and 25 percent	3	3	3
Between 25 and 50 percent	4	4	4
Between 50 and 100 percent	5	5	5

RESPONDENTS RESPONSES

Please explain how your metric planning time is divided among such activities as:

- o Meeting with other officers of the corporations for planning purposes.
- o Determing how legal impediments affect metrication.
- o Preparing strategies for voluntary conversion.
- o Following market trends, suppliers use, or competitors use of metric standards.
- o Developing lobbying efforts for/against metrication.
- o Determing cost/benefit of greater metric use.

RESPONDENTS RESPONSES

SECTION II: Possible Correlation Between Metric Planning and Perceived Legal Impediments to Voluntary Conversion

In this section, we are interested in finding out if there is a correlation between corporate metric planning and the extent of perceived legal impediments to voluntary metric conversion.

2a. A x x In previous telephone conversations with your corporation, we have identified the products that have undergone some form of metrication. We then identified the federal, state, and local laws and regulations that affect their production/distribution as well as those laws and regulations that affect general business practices, all of which were considered to be impediments to voluntary metric conversion. (A list of these products and laws and regulations was sent to you along with the cover letter that arranged this conversation; if you do not have this list, I will be able to read it to you as we proceed).

As the legal representative of your corporation who is most knowledgeable of your corporation's metrication efforts, we are interested in determining your opinion of the degree to which each of these laws and regulations present an impediment to metrication. For example, can each of the laws and regulations be classified as:

- o a law or regulation that prohibits outright the use of metric units of sizes.
- o a law or regulation which makes the use of the metric system costly, cumbersome, or difficult to the extent that the benefits of conversion tend to be outweighed by the burdens that it presents.
- o a law or regulation which hampers the use of metric units or sizes but does not necessarily outweigh the benefits of conversion.
- o a law or regulation which really has no or minimal impact on of metrication efforts.

RESPONDENTS RESPONSES

The matrix below suggests how the interviewer can catagorize the information received. As you rate each law, please explain your rating.

LAWS	NATURE OF THE IMPEDIMENT			
	Prohibit	Cumbersome	Hamper	No Impact

RESPONDENTS RESPONSES

2b A x x Do you believe that those people in your corporation who are involved with metric planning are aware of these various legal impediments to voluntary metric conversion and the level of restriction that they present?

YES.....1 x x
NO.....2 x x
Not sure.....3 x x

Please explain why or why not and how this type of information is shared between the legal staff and the planning staff.

[If the other respondents are very unaware of these legal impediments that the legal representative has cited, it is necessary to go over these responses with them]

2c. x B x Does your corporation have a formally or informally organized metric planning mechanism or team that discusses metric policy?

YES.....x 1 x
NO.....x 2 x
Not Sure.....x 3 x

Please explain why or why not.

[If no, probe to see if there is any mechanism/team such as those listed below in 2c; if the answer to question 2b is no, determine if any metric planning is done, how it is done, and proceed with 2d; if no metric planning is done, skip to the next topic]

2d. x B x Can this mechanism or team be described as

an ad hoc organization with an indefinite role, or.....x 1 x

a loosely organized body that meets periodically or on an "as needed" basis, or.....x 2 x

a defined organization with powers of recommendation, or.....x 3 x

a structured planning body with decision making authority, or.....x 4 x

does another description fit that you could specify (_____ _____).....x 5 x

RESPONDENTS RESPONSES

Please describe how this organization functions, who participates, when meetings are usually held, what issues are normally discussed, how often the issue of laws and regulations that affect metrication is raised, and how the organization's decisions affect overall corporation policy that concerns the use of metric standards.

2e. x B C Do you believe that the level of metric planning has increased over the last five years in your corporation?

YES.....	x	1	1
NO.....	x	2	2
Not sure.....	x	3	3

Please explain why or why not.

[IF YES, read 2f, IF NO, read 2f']

2f. x B C Do you believe that the increase in metric plannning has led to a greater awareness of the legal impediments to voluntary metric conversion?

n/a.....	x	0	0
YES.....	x	1	1
NO.....	x	2	2
Not sure.....	x	3	3

Please explain why.

2f' x B C Do you believe that the decrease in metric planning has been the result of a greater awareness of the legal impediments to voluntary metric conversion?

n/a.....	x	0	0
YES.....	x	1	1
NO.....	x	2	2
Not sure.....	x	3	3

Please explain.

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RESPONDENTS				RESPONSES
2g	x	B	C	Do you believe that there is a correlation between your corporation's metric planning and the extent of perceived legal impediments to voluntary metric conversion?

YES.....	x	1	1
NO.....	x	2	2
Not sure.....	x	3	3

Please explain why or why not.

RESPONDENTS RESPONSES

SECTION III: Distribution of Perceived Impediments Among Federal, State, and Local Laws and Regulations

In this section, we are interested to know the distribution of the perceived impediments among federal, state, and local laws and regulations in an effort to find out which tend to have the greatest impact or tend to be the most burdensome to metrication.

3a. A B C In your opinion, which set of laws and regulations -- federal, state, or local -- have the greatest impact or affect your corporation's metric planning the most. This set would not necessarily be the most burdensome, but would have the greatest influence over planning and conversion decisions.

Federal.....	1	1	1
State.....	2	2	2
Local.....	3	3	3

Please explain why.

3b. A B C Would you say that this set of regulations has the greatest affect of the three on other aspects of the corporation's business practices that are not related to metric planning?

YES.....	1	1	1
NO.....	2	2	2
Not sure.....	3	3	3

Please explain why or why not.

3c. A x x Please cite the most burdensome federal law or regulation affecting metrication. If you can identify a second or third most burdensome law or regulation, please do so also. Please explain why it is most burdensome.

3d. A x x Please cite the most burdensome state law or regulation affecting metrication. If you can identify a second or third most burdensome law or regulation, please do so also. Please explain why it is most burdensome.

3e. A x x Please cite the most burdensome local law or regulation affecting metrication. If you can identify a second or third most burdensome law or regulation, please do so also.

RESPONDENTS RESPONSES

Please explain why it is most burdensome.

3f. A x x Is there a correspondence among the most burdensome type of law or regulation from each level of government in how it affect metrication?

YES.....1	x	x
NO.....2	x	x
Not sure.....3	x	x

Please explain why or why not. In doing so, please compare and contrast the relative burden of these federal, state, and local laws.

SECTION IV: Relationship Between Corporate Lobbying and the Perception of Legal Impediments to Voluntary Conversion

In this section, we are interested in knowing if some of these perceived impediments to metrication are a result of your corporation's or industry's efforts. Therefore,

4a. A B C Have your corporation's lobbying efforts been concerned with the issue of metric conversion, either directly or indirectly?

YES.....1	1	1
NO.....2	2	2
Not sure.....3	3	3

[If "no," probe using the idea of direct and indirect lobbying efforts as used below; if the respondent feels that no lobbying efforts concerning metrication exist move to Question 5a, EXCEPT respondent A who should still answer 4h.]

4b x B C Have these efforts been

direct, in the sense of lobbying for or against laws and regulations that directly govern the use of the metric system or,.....x	1	1
indirect, in the sense of lobbying for or against product standards or business practices that are affected by an issue such as metrication (but that metrication is not the prime concern of such lobbying), or.....x	2	2
have the efforts been of both a direct and indirect nature, depending upon the issue.....x	3	3

Please explain why this approach is taken.

RESPONDENTS RESPONSES

4c. x B C Have the lobbying efforts been

restricted to your corporation, or.....x 1 1

done in conjunction with an industry-wide effort through a national association of similar organizations .....x 2 2

Please explain why this strategy is used.

4d. x B C Are these lobbying efforts aimed at

Congress and federal agencies,

YES.....x 1 1
NO.....x 2 2
Not sure.....x 3 3

state legislature and state agencies,

YES.....x 1 1
NO.....x 2 2
Not sure.....x 3 3

local government and agencies.

YES.....x 1 1
NO.....x 2 2
Not sure.....x 3 3

Please elaborate by explaining what types of issues concerning metrication are usually lobbied at which level of government. Also explain which level is most important to issues concerning metrication.

4e. x B C Is the purpose of these lobbying efforts

to promote laws and regulations that maintain the status quo of measurement standards, or.....x 1 1

to promote laws and regulations that will facilitate the voluntary conversion to metric standards, or.....x 2 2

the lobbying effort varies depending upon issue or level of government under consideration.....x 3 3

What is the justification for this strategy and how does it compare to other lobbying efforts?

RESPONDENTS					RESPONSES		
4f.	x	B	C	In your opinion, have the lobbying efforts been			
				not successful.....x		1	1
				moderately successful.....x		2	2
				or highly successful.....x		3	3
				(not sure).....x		4	4
				in promoting your corporation's desires concerning the issue of metrication.			
				Please explain.			
4g.	x	B	C	Do you think that you corporation's perception of the legal impediments to metrication have been			
				increased.....x		1	1
				decreased.....x		2	2
				or not really changed.....x		3	3
				(not sure).....x		4	4
				by its lobbying efforts concerning metrication.			
				Please explain why or why not.			
4h.	A	x	x	Do you feel that there are other legal restrictions that hamper you corporation's present or potential lobbying efforts which would be aimed at issues that concern metrication?			
				YES.....1	x	x	
				NO.....2	x	x	
				Not sure.....3	x	x	
				Please explain.			

RESPONDENTS RESPONSES

SECTION FIVE: Support of Industry-wide efforts to remove perceived legal barriers to voluntary metrication.

We would like to know the likelihood of your corporation's support of industry-wide efforts to change or remove the perceived legal impediments to voluntary metric conversion. Therefore,

5a. x x C Concerning the adoption of production standards in general, would you say that your corporation

quickly adopts new industry standards, or..... x x 1

is conservative in adopting new industry standards.....x x 2

Please explain why.

- o Leadership role in the industry.
- o Need to remain competitive.
- o Cautious of new trends.
- o Technology/standards do not change greatly.

5b. x B C Concerning the adoption of metric standards, would you say that your corporation

has adopted them at a rate that is higher than that for the industry, or.....x 1 1

at a rate similar to the rest of the industry, or.....x 2 2

at a rate below that of the industry..... x 3 3

Please explain why this is so.

5c. x B C Concerning the legal impediments to metrication, do you believe that there are industry-wide efforts that are or can be made to remove legal impediments and thus facilitate voluntary metric conversion?

YES.....x 1 1

NO.....x 2 2

Please explain what these efforts are and their results.

RESPONDENTS RESPONSES

- o Lobbying on the federal level.
- o Lobbying on the state level.
- o Other means.

5d. x x C Concerning your corporation's support for such efforts, would you

not support them, or.....x x 1
moderately support them, or.....x x 2
highly support them, ...x x 3

Please explain why.

5e. A x x Do you believe that antitrust legislation or any other set of laws impede your efforts to bring about voluntary metric conversion, even though the impediment does not relate directly to metrication?

YES.....1 x x

NO.....1 x x

Please explain why or why not.

5f. A x x Do you believe that these legal restrictions can be overcome so that other legal impediments can be dealt with?

YES.....1 x x

NO.....1 x x

If yes, what experiences has your corporation had with working within the intent of the antitrust legislation yet being able to coordinate industry-wide efforts to remove legal impediments such as those that affect voluntary metrication?

RESPONDENTS RESPONSES

SECTION VI: The Causes of the Perception of Legal Impediments.

In this section, we are interested in knowing to what extent the perceived impediments to metrication are actual, and if they are not actual, what causes the perception of an impediment.

6a. A B C In your opinion, what are the causes of the legal impediments to voluntary metric conversion.

6b. A B C In your opinion, what causes a particular law or regulation to be perceived as an impediment to voluntary metric conversion?

6c. A B C Do you believe that some if not most of the legal impediments to metrication discussed so far actually

prohibit voluntary conversion, or.....1 1 1

are primarily obstacles to conversion that can be overcome.....2 2 2

(not sure).....3 3 3

Please explain why.

6d. x B C In your opinion, which has had the greater affect upon your corporation's metric planning and the rate at which it has adopted metric standards?

the legal impediments, or.....x 1 1

production/marketing considerations.....x 2 2

Please explain.

6e. x B C With this in mind, how would you compare the benefits of voluntary conversion to the metric system in relation to the cost of overcoming the legal impediments?
Would there be

no benefits whatsoever.....x 1 1
minimal benefits relative to costs.....x 2 2
moderate benefits relative to cost.....x 3 3
high benefits relative to cost.....x 4 4

Please explain.

RESPONDENTS RESPONSES

SECTION VII: Experience in Overcoming and Removing the Legal Impediments

In this last section, we would like to know your corporation's experiences in overcoming perceptions or actual impediments to voluntary metric conversion.

7a. A B C What has been your corporation's general experience in overcoming the legal impediments to voluntary metric conversion? What means were used and how successful were they?

7b. A B C Would you say that your corporation's previous experiences in overcoming the legal impediments to metrication have been

not successful	1	1	1
minimally successful	2	2	2
moderately successful, or	3	3	3
highly successful	4	4	4

Please explain.

7c. A x x What means have you or would you reccomend to your corporation for overcoming those laws and regulations that you cited as prohibiting the adoption of metric standards?

7d. A x x What means have you or would you reccomend to your corporation for overcoming those laws and regulations that you cited as generating less than outright prohibition against the adoption of the metric system?

Please explain any difference in approach between the first and the second case.

7e. A B C In conclusion, do you feel that actual and perceived impediments to voluntary metric conversion should be overcome to make the metric system more beneficial to your corporation?

YES	1	1	1
NO	2	2	2
Not sure	3	3	3

SUPPORTING STATEMENT FOR OMB REQUEST FOR APPROVAL

I. INTRODUCTION

I.A. BASIC INFORMATION

The purpose of this document is to provide the Office of Management and Budget (OMB) with a justification for a survey of selected major U.S. corporations to determine the legal impediments to metrication. The survey is sponsored by the U.S. Metric Board which has contracted with The Newman & Hermanson Company of Washington, D.C., to perform the survey and subsequent data analysis. The survey will be conducted primarily through telephone interviews with no less than two principal respondents at 47 selected corporations. In addition, in-depth on-site interviews will take place at 4 of the 47 corporations.

The Metric Conversion Act of 1975 (PL 94-168) established the United States Metric Board for the purpose of coordinating the voluntary conversion of the United States to the metric system. Section 5 of the Act established the U.S. Metric Board (USMB) as an independent federal agency. The USMB is responsible for coordinating voluntary conversion by providing an opportunity for all interested parties (business, labor, and consumers in particular) to plan conversion activities, by educating the public to assure understanding and awareness of the metric system, and by conducting research aimed at identifying and solving special

problems and issues raised by metrication.

Specifically, the USMB is required by the act to:

- Consult with and take into account the interests, views, and conversion costs of United States commerce and industry (Section 6-1).
- Collect, analyze, and publish information about the extent of usage of metric measurements; evaluate the costs and benefits of metric use; and make efforts to minimize any adverse effects resulting from increasing metric usage (Section 6-8).
- Conduct research, including appropriate surveys; publish results of such research; and recommend to the Congress and to the President such action as may be appropriate to deal with any unresolved problems (Section 6-9).
- Submit annually to the Congress and to the President a report on its activities (Section 6-10).

The Board determined that among its priorities was the elimination of legal barriers to metrication. Since its establishment in 1978, the Board has taken a number of steps necessary to the determination of actions to be taken to remove legal impediments. The Board contracted with Middlesex Research Center, Inc. to assist in the data collection for the Board's Report to the President and the Congress (Providing a Metric Option: Can Laws and Regulations be amended in a timely manner?). The Middlesex Research Center report, A Study of Metric Measurement and Legislation (Metric Measurement and Legislation), was submitted in September 1979. Further, the Board contracted with King Research to survey a sample of the Fortune 1000 to report the status and projections of metrication among large U. S. firms and industries. The findings of that survey were indicated in the report, U.S. Metric Board 1979 Survey of Selected Large U. S. Firms and Industries (1979 Survey). Metric Measurement and Legislation concluded that while no barriers to metrication existed (i.e., laws that prohibit the use of the metric system), there are many deterrents (i.e., regulations that make use of the metric system costly, cumbersome, or difficult) and nuisances (i.e., regulations that hamper the use of the metric system). The 1979 Survey however, found

that there was a high perception of both legal and non-legal barriers to metrication among the Fortune 1000 firms surveyed. This finding corresponded to a 1978 Government Accounting Office report that observed that there was a high perception of legal barriers to metrication by U.S. businesses.

Now it is necessary for the Board to develop its own findings and then make a determination of its next steps. To do that the Board contracted with the Newman & Hermanson Company to conduct the research study of the nature and extent of legal barriers to metrication. The study is to be based in part on the existing research and in part on new data gathered through interviews.

I. B. STUDY OBJECTIVES

- To determine whether legal barriers to metrication actually exist, and if so determine the nature and source of the barriers.

- To analyze the perceptions that legal barriers exist in order to understand the extent to which the problems identified are not statutory prohibitions but rather laws which make conversion cumbersome or expensive (deterrents); or laws which hamper the use of metric units (nuisances).

- To understand the relationship of the perceptions relating to metric conversion and the legal environment of individual businesses.

- To provide to the Metric Board with an analysis of the situation sufficient to allow the Board to determine the extent of USMB involvement in addressing the problems, real and perceived.

I.C. INTENDED USE OF THE DATA

The Newman & Hermanson Company will use the survey to collect data needed to prepare a report that will answer the seven analytical study objectives listed below.

The study should be designed to provide the following:

1. The explanation of two reports (Metric Measurement and Legislation and 1979 Survey) given their contrasting findings.

2. The correlation between a corporation's metrication planning and the extent of its perception of legal impediments to metrification.

3. The distribution of these perceived impediments between federal, state, and local laws and regulations.

4. The relationship between company and industry lobbying and any resulting perception of legal impediments.

5. The liklihood that a corporation would support efforts by the industry to change or remove the perception of legal impediments.

6. The extent to which the perceived impediments are actual, and if they are not actual, the causes of the perceived impediments.

7. The experience of some corporations in overcoming and removing the perceptions of (or actual) regulatory impediments to metrification.

The questionnaire (see Exhibit A) has been devised that will provide needed data from the principal respondent(s). Section III explains the relationship between the seven analytical study objectives and the questions.

I.D. INAPPROPRIATENESS OF EXISTING DATA SOURCES

To our knowledge, no comprehensive in-depth survey of the major corporations' perceptions/experience about the legal impediments to metrication exists. Both Metric Measurement and Legislation and the 1979 Survey serve as good reference points. Those two studies, however, concentrated on other topics and hence could not be used for the Board's full understanding of the extent to which legal impediments do and do not exist. Therefore, the proposed study is a unique effort to provide in-depth information and analysis heretofore unavailable.

II. THE SURVEY PLAN

Respondent Universe

The proposed survey is to consist of 47 telephone and 4 on-site interviews with the sample of Fortune 1000 corporations including the 41 firms that expressed in the U. S. Metric Board 1979 Survey of Selected Large U. S. Firms and Industries (1979 Survey) that legal impediments to metrication existed. In addition, N&H proposes to include in the study 10 Fortune 1000 firms which did not participate in the 1979 Survey. For each firm, H will contact at least two of three principal respondents whose knowledge of and involvement with the corporation's metrication efforts will allow informed responses to the survey issues. The the three principal respondents which may be included in the study are:

A. The corporation's legal representative who is involved with or is knowledgeable of the corporation's metrication efforts.

B. The corporation's metric coordinator or staff person most closely associated with the coordination of metric conversion activities.

C. The corporation's planning official who is most involved with or who is most knowledgeable of the corporation's metrication efforts.

Of the 51 corporations to participate in the study, a control group of 10 corporations not in the 1979 Survey sample will be included. Those corporations will be selected in the same manner the 1979 sample was selected i.e. according to the weighted size of the four major industry classifications (transportation, consumer products, manufacturing and production, and aerospace and electronics).

GRID FOR THE SELECTION OF THE SAMPLE SET

Industry Category	Corporations that previously expressed some perception of legal barriers (n = 41)	Control Group (n=10)
Transportation		
Consumer Products		
Manufacturing/Production		
Aerospace/Electronics		

Once the corporation is selected, N&H will follow a four-step strategy which is outlined below.

STEP ONE:

The corporation's metric coordinator will receive the first call and will be asked to identify those major products (by SIC number category) that are or would be most affected by any metrication effort.

STEP TWO:

The corporation's legal representative will then be called, read the list of products identified in step one, and asked to identify the most prevalent federal, state, and local laws that affect present or future metrication efforts for the regulatory topics listed below. These topics correspond to the U.S. Code and/or Code of Federal Regulations topics with which the respondent would be familiar with. The respondent would also be asked to identify business practices, taxation, and safety regulations -- particularly those of a state or local origin -- that would affect the corporation's metrication plans (separate from the effect on specific products).

TOPIC AREAS

Commerce and foreign trade
Commercial and business practices
Energy and mineral resources
Revenue and taxation
Patents, trademarks, and public contracts
Shipping and navigation
Other applicable topics

State regulations would follow generally the same topics, particularly those concerning granting of licenses, collecting of state revenue, and other state enforced regulations. Local regulations would concern applicable topics, particularly building codes, zoning, and other local ordinances such as fire and safety regulations that might be affected by metrication. The respondent will be prompted to consider each product group, the applicable regulatory topics for the applicable government jurisdicition, and the general business practices that would be affected by metrication.

STEP THREE:

The information gathered to this point -- the corporation's products or business practices that are or may be affected by metrication and the regulations that may impede this process -- will be synthesized by The Newman & Hermanson Company for use in the next step of the survey strategy. The information will then be mailed to the respondents with a cover letter saying when the telephone or on-site interview will take place.

STEP FOUR:

Individual interviews with each respondent will then take place after allowing for ample time for the cover letter and information to arrive by mail. This information can be read to the respondent (or presented at the time of the on-site interview) if it has not reached the respondent for one reason or another. The interview will begin with an open-ended question concerning the corporation's general experiences with metrication, the problems involved, and the nature of those problems. Each respondent will then be asked the questions that apply.

III. THE SURVEY INSTRUMENT

III.A. DISCUSSION OF THE SURVEY INSTRUMENT

Through experience gained in the initial review of previous studies, conferences with U. S. Metric Board staff, and conversations with representatives of the Fortune 1000, The Newman & Hermanson Company has developed an instrument to be used in the telephone interviews. That instrument is provided in Exhibit A of this document. The questionnaire covers topics which address the seven analytical study objectives. A set of questions have been developed to provide: general understanding of the corporation's experience with metrication; correlation between metric planning and perceived legal impediments; distribution of perceived impediments among federal, state and local laws; relationship between corporate lobbying and the perception of legal impediments; support of industry-wide efforts to remove perceived legal impediments; causes of the perceptions that legal impediments exist; and experience in overcoming and removing legal impediments. The same instrument can be used for the three potential classes of respondents. Some of the questions, however, will not be addressed to each respondent. Each question is preceded by a code (A, B, or C) which indicates which of the respondents should be addressed the question.

The draft instrument was submitted to the U. S. Metric Board staff for approval. Further, the instrument was pre-tested using representatives of two Fortune 1000 companies. As a result of the pre-test, the Newman & Hermanson Company revised its original plan to question the legal representative, the metric coordinator, and the planning official in every instance. In terms of the questions, they were easy for the respondents to understand. Where the respondent had had experience with the metrication activities there was no difficulty in providing the necessary information.

III. B. RELATIONSHIP OF STUDY DESIGN TO USMB OBJECTIVES

The draft survey instrument is designed to insure that N&H will collect data and perceptions necessary to address the USMB study objectives. It is our intent to use the instrument both in the on-site interviews as well as in the telephone interviewing. The manner in which the instrument is structured will allow it to be used for three types of respondents.

This plan will discuss the questions in the draft instrument in relationship to the study objectives. The respondents to the study instrument are listed below along with the letter in the questionnaire associated with each respondent.

- A corporate legal representative (A)
- The metric coordinator (B)
- A planning official (C)

Section I of the instrument has as its purpose deriving general information about the corporation's experience with metrication and the metric activities of the respondents. Specifically this section is designed to identify: the extent to which the corporation has been involved in metrication (1a); the general experience of the corporation dealing with laws and regulations which could affect metric conversion; and the role and time commitment of each of principal respondents to metric activities.

Below is a discussion of the manner in which the balance of the survey instrument will address the USMB study issues. Where applicable there will be a discussion of the relationship between the questions in the survey instrument and the USMB study issues.

STUDY ISSUE 1: Are two studies commissioned by the United States Metric Board consistent?

The N&H study will not concentrate on an analysis of the inconsistencies between Metric Measurement and Legislation and the 1979 Survey.This study will however include an isolation of the areas of inconsistencies between the two reports which should assist the Board in the resolution of issues raised by the findings in the two studies. Although there will be no specific questions to address this study issue, most of the questions in the survey instrument will assist in some manner in addressing this issue.

STUDY ISSUE 2: Is there a correlation between company metrication planning and the extent of perceived legal impediments?

In order to address this study objective, questions should be asked about the corporation's metric planning and the nature of the relationship of planning to perceptions about the barriers to metrication. The intent of the study objective is to determine if a high level of planning activity by a corporation has a greater likelihood yielding the perception that legal impediments do or do not exist. To this end, the first question in this section attempts to determine from the legal representative the degree to which the regulations affect metrication (2a). The preliminary telephone inquiry will have identified some of the laws affecting or which could affect their attempts to convert. Although the terms, "barrier," "deterrent," and "nuisance" will not be used in the survey, there will be an attempt to classify the impediment in those groupings in the analysis. To that end, the survey instrument will describe each classification in an effort to determine the nature of the impediment to metrication. The legal representative will not be expected to discuss the planning process and the planning official will not be expected to discuss in great detail the nature of the laws and regulations. The instrument is structured to allow a matching of the data on legal impediments with the planning process during the analysis. The questions directed to the planning official seek to understand the corporation's planning mechanism and the extent to which planning related to the level and extent of metric activity. To that end, questions will be asked of the planning official concerning the existence of a metric planning mechanism (2c) and the organization, authority, and importance of planning within the corporation (2d). Three questions (2e, 2f, and 2g) are designed to assist in the understanding of the correlation between planning and perceptions about legal impediments. The metric coordinator and the planning official will be

asked if planning has increased over the last five years (2e), whether the increase or decrease is the result of a greater awareness of legal impediments (2f or 2f'), and the respondent's understanding of the correlation between planning and the extent of perceived legal impediments. It will be interesting to note if there is an agreement between the metric coordinator and the planning official about the level of planning to determine if corporations with more organized planning (explored by 2c, 2d, and 2e) have a higher or lower level of perceived impediments (2a, 2f, 2f' and 2g).

STUDY ISSUE 3: How are these perceived impediments distributed between local, state and federal laws and regulations?

Prior to addressing the questions relating to this study issue in the instrument, information will already have been collected on the distribution of laws and regulations affecting metrication. In order to understand the impact of laws by level of government, the survey instrument will include questions which ask all respondents to rate the level of government's laws impact on metrication (3a). In order to establish some comparability, the respondents will be asked to determine if those same laws have the greatest effect on other aspects of the corporation's business practice. The legal representative will be asked to identify the first, second, and third most burdensome federal, state, and local laws or regulations and to discuss why. Further the legal representative will be asked to comment on any correspondence of burden as between jurisdictions (3f).

STUDY ISSUE 4: Are some of these perceived impediments the result of company or industry lobbying efforts?

The survey instrument will include direct questions about the relationship between the corporation's lobbying efforts and metric conversion. The metric coordinator and the planning official will be asked to determine the intensity, aim, purpose, and success of metric lobbying. Specifically, the questions deal with the direct or indirect approach of lobbying on metric issues (4b); whether or not the effort is restricted to the corporation or part of an industry-wide effort (4c); the levels of government to which the lobbying efforts are aimed (4d); the purpose of the efforts (status quo or pro conversion)(4e); and the perceived degree of success of the efforts (4e)(4f). Once the degree of metric lobbying can be established, the respondents will be asked to indicate if lobbying efforts have increased or decreased the corporation's awareness of legal impediments. The legal representative will be asked to explain if the restrictions on lobbying in general restrict the corporation's metric lobbying and thus increasing or maintaining perceived or

actual impediments to metrication (4h).

STUDY ISSUE 5: What is the likelihood that a company would support efforts by the industry to change or remove the perceived legal impediments?
There will be an attempt to understand first the company's position on the adoption of standards generally in order to have some measure of the intensity of the feelings about metric standards. A line of inquiry will be established for the metric coordinator and the planninng official which will attempt to rate the corporation's adoption of metric conversions in comparison to the adoption by the industry. This may allow some findings as to the corporation's vision of and support for any industry-wide efforts to remove legal impediments. The legal representative will be asked to discuss the potential implications of anti-trust legislation on industry-wide efforts to remove legal impediments (5e). Further there will be an attempt to understand if the legal impediments can be removed while staying within the requirements of the anti-trust laws.

STUDY ISSUE 6: To what extent are perceived impediments actual; and if not actual, what causes the perception of an impediment?

The survey instrument will include questions seeking to determine "micro" reasons why a particular law or regulation is seen as an impedimennt to metrication (6b). The data compiled in response to question 2(a) can be used as examples to determine the reasons why the regulations previously cited as impediments are indeed perceived to present problems. Other questions will be designed to determine "macro" reasons for perceived and actual impediments (6a). It is the intent of N&H to use as probes the data collected in other sections of the survey instrument such as that relating to conflicting government regulations, lobbying efforts, and the adoption of industry-wide efforts.

STUDY ISSUE 7: Have some firms had experience in overcoming and removal of such perceptions or actual impediments?

Much of the data collected to address this study issue is discussed in connection with Study Issues 4 and 5. The survey instrument is designed to treat this question in a very direct manner. There will be an attempt to measure the success of the experiences with metric conversion. There will be questions to identify the means for overcoming actual impediments and perceived impediments.

IV. OTHER INFORMATION REGARDING THE COLLECTION OF THE DATA

IV. A. DATA RESPONSIBILITY

The conduct and the analysis are the responsibility of Constance Newman of The Newman & Hermanson Company. The confidentiality of the individual respondents will be maintained and the results of the survey will be presented in aggregate terms only.

IV. B. PROJECT WORK SCHEDULE

It is anticipated that the telephone survey will take place for two weeks following the receipt of OMB clearance. Preliminary data analysis will take place in week three in order to schedule the on-site interviews at the four companies in weeks four and five. Assuming OMB clearance in June, the schedule will be as follows.

Activity	Time
Conduct of telephone interviews	July 6 - July 17
Preliminary analysis	July 19 - July 23
Site visits	July 26 - August 7
Data analysis and Report Preparation	August 10-August 21

IV. C. ESTIMATED BURDEN TO RESPONDENTS

It is estimated that it will take a maximum of one half-hour for respondents to complete the survey. A maximum of one hundred and fifty-three (153) estimated respondents will respond to this single-time survey. It is not anticipated that there will be any variation in the response burden among different respondents. Therefore, the total estimated hours of burden in Fiscal Year 1981 is seventy-seven (77).

IV. D. ESTIMATED COST TO THE FEDERAL GOVERNMENT

The total cost of the study is $8900.

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IMPORTANT NOTE

There is some confusion about the role of the U.S. Metric Board and the national policy on metric conversion

Congress established the Board to plan and coordinate the voluntary increasing use of the metric system. It is not, however, the role of the Board to promote metric usage.

The Board is an independent Federal agency responsible for conducting public information and education programs and appropriate research, coordination and planning activities.

Metric Conversion in this country is voluntary. When Congress passed the Metric Conversion Act in 1975 it did not make conversion mandatory; nor did it establish a target date or deadline for conversion.

The Board has no compulsory power. It is a public service agency consisting of citizen representatives from all walks of American life. Its 17 members are appointed by the President and confirmed by the Senate. Members are nominated to represent labor, retailing, small business, industry, construction, state and local governments, science, engineering, consumer groups and the public at large.

Please contact us if you have any questions about the role of the Board or the national policy on metric conversion.

UNITED STATES METRIC BOARD

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